

NOMENCLATURAL AND SYNONYMICAL NOTES ON THE GENERA  
*DIPLONYCHUS* LAPORTE AND *APPASUS* AMYOT AND SERVILLE  
(HETEROPTERA: BELOSTOMATIDAE)

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**Abstract.**—The genus *Appasus* Amyot and Serville is resurrected from synonymy, and *Muljaris* Lee placed as a junior synonym (new synonymy). Revised synonymies are given for the genera *Appasus* and *Diplonychus* Laporte, and for *Diplonychus annulatus* Fabricius. *Diplonychus heeri* Polhemus, New Name, is proposed as a replacement name for *Diplonychus rotundatus* Heer, 1853, a junior secondary homonym of *Diplonychus rotundatus* (Laporte, 1833). *Diplonychus indicus* Venkatesan and Rao, 1980 is placed as a junior synonym of *Diplonychus rusticus* (Fabricius, 1781).

**Key Words:** Heteroptera, Belostomatidae, *Diplonychus*, *Appasus*, taxonomy, synonymy

**Genus *Appasus* Amyot and Serville 1843,  
REVISED STATUS**

*Naucoris* Fabricius, 1803: 111 (in part)  
*Appasus* Amyot and Serville, 1843: 430.  
Type species: *Appasus natator* Amyot and Serville, 1843: 431 (= *Naucoris nepoides* Fabricius 1803: 111), Monobasic.  
*Amyotella* Spinola, 1850: 48 (no included species). Type species: [*Appasus*] *natator* Amyot and Serville, 1843: 431 (= *Naucoris nepoides* Fabricius, 1803: 111); fixed by Kirkaldy, 1906.  
*Muljaris* Lee, 1991: 10. Type species: *Appasus japonicus* Vuillefroy, 1864: 141 (as *Diplonychus japonicus*). Original designation. New Synonymy.

Fabricius (1803) described the new species *nepoides* under *Naucoris*. However he retained both *annulata* Fabricius, 1781, and *rustica* Fabricius, 1781, under *Nepa*.

Lee (1991) proposed the genus *Muljaris* to hold *Diplonychus japonicus* Vuillefroy and *Diplonychus major* Esaki, which he separated from *Diplonychus* on the basis of a number of characters. A new generic entity was unnecessary because the type species of

*Appasus*, *Naucoris nepoides* Fabricius, has all of the characters used to separate the group containing *japonicus* and *major*, thus *Muljaris* must fall as a junior synonym of *Appasus*. Lee failed to analyze the described species previously held under *Diplonychus* and place them into their respective genera, or undoubtedly he would have realized that a genus group name was already available for his newly conceived group. A review of the genera germane to this work was accomplished by examination of specimens in the Polhemus Collection, which currently holds all described species except *stali* Mayr, placed by Lee with the species retained in *Diplonychus*, a placement that seems correct.

Lee's separation of *Diplonychus* into two genera seems to be well founded on both somatic and male genitalic characters. However several of the characters need modification or clarification, e.g. the morphological differences of the hemelytral membrane, and the "lips marks" (sic) on the scutellum.

The purported generic differences of the hemelytral membrane (Lee, 1991, figs. 3A,

3B) actually represent wing morphs found in a single population of *D. rusticus* (F.) from Viet Nam that also contains an intermediate morph. The flightless morph with the membrane reduced or absent has in addition reduced straplike flight wings, narrowed and angulate hemelytra distally, and sharp posterolateral pronotal angles. The fully alate morph has a well-developed membrane with veins in addition to the transparent margin present in all morphs, normally rounded hemelytra distally, fully developed flight wings, and the posterolateral pronotal angles sloping anteriorly. This phenomenon of linked characters in different flight morphs is also common in Naucoridae.

The "lips marks" of the posteroapical angle of the scutellum, said to be present in the "*rusticus* group," but absent in the "*japonicus* group" is an inconsistent color character that, in my view, should not be used to separate genera.

Other differences given by Lee are useful, and found in the key couplet that follows. For details of the male genitalic structures, see figures in Lee (1991). In addition to the differences given by Lee, *Appasus* species have prominent eyes, very different from those of *Diplonychus* species, in which the eyes are "streamlined" and flush with the lateral margins of the head.

#### KEY TO *APPASUS* AND *DIPLONYCHUS*

1. Lateral eye margins flush with lateral margin of head, not protruding laterally. First antennal segment equal to or longer than the lateral prolongations of segments II and III, and segment IV. Male pygophore tapering more or less evenly between basal portion and apical semitubular portion. Lateral arms of phallic basal plate each with a low angular medial projection; phallus laterally flat, exophallotheca with sclerotized lateral rhomboid plates; endosoma laterally flat, hatchet-shaped. . . . . *Diplonychus* Laporte
- Lateral eye margins not flush with lateral margin of head, prominent, protruding laterally. First antennal segment shorter than the lateral prolongations of segments II and III, and segment IV. Male pygophore with an abrupt sculptured shoulder between basal portion and

apical semitubular portion. Lateral arms of phallic basal plate without projections, smooth; phallus tubular, exophallotheca with narrow sclerotized lateral plates; endosoma tubular, not hatchet-shaped. . . . *Appasus* Amyot and Serville

The following species are now assigned to *Appasus*, with original genus given in brackets if applicable:

- ampliatius alluaudi* (Montandon, 1914). [*Diplonychus*]. New Combination  
*ampliatius ampliatius* (Montandon, 1914). [*Diplonychus*]. New Combination  
*capensis* (Mayr, 1871). [*Diplonychus*]. New Combination  
*grassei ghesquieri* (Poisson, 1940). [*Diplonychus*]. New Combination  
*grassei grassei* (Poisson, 1937). [*Diplonychus*]. New Combination  
*grassei luitikilae* (Poisson, 1968). [*Diplonychus*]. New Combination  
*kjellanderi* (Menke, 1962). [*Diplonychus*]. New Combination  
*japonicus* Vuillefroy, 1864. Restored Combination  
*major* (Esaki, 1934). [*Diplonychus*]. New Combination  
*nepoides* (Fabricius, 1803). [*Naucoris*]. Restored Combination  
*procerus divoi* (Poisson, 1968). [*Diplonychus*]. New Combination  
*procerus procerus* (Gerstaecker, 1873). [*Diplonychus*]. New Combination  
*quadrivittatus* Bergroth, 1893. Restored Combination  
*stappersi* (Montandon, 1916). [*Sphaeroderma*]. New Combination  
*urinator sudanensis* (Linnavuori, 1971). [*Diplonychus*]. New Combination  
*urinator urinator* Dufour, 1863. Restored Combination  
*wittei* (Poisson, 1949). [*Diplonychus*]. New Combination

#### Genus *Diplonychus* Laporte, 1833

*Nepa* Fabricius, 1781, vol. 2: 333 (in part)  
*Diplonychus* Laporte, 1833: 18. Type species: *Nepa rustica* Fabricius, 1781, vol. 2:

333 (= *Nepa plana* Sulzer, 1776: 92). Monobasic.

*Sphaerodema* Laporte, 1833: 18 (as subgenus of *Diplonychus*). Type species: *Sphaerodema rotundata* Laporte, 1833: 18 (= *Nepa annulata* Fabricius, 1781: 333). Monobasic. Synonymized by Kirkaldy, 1906: 151.

*Diplonycha* Spinola, 1837: 53 (variant spelling).

*Atomya* Spinola, 1850: 48 (no included species). Synonymized by Kirkaldy, 1906: 151.

*Nervinops* Dufour, 1863: 348. Type species: *Nepa rustica* Fabricius, 1781, vol. 2: 333 (= *Nepa plana* Sulzer, 1776: 92). Monobasic. Synonymized by Kirkaldy, 1906: 151.

*Cyclodema* Dufour, 1863: 397 (suggested new name for *Sphaerodema* Laporte). Synonymized by Kirkaldy, 1906: 151.

*Nectocoris* Mayr, 1871: 432. Type species: *Nectocoris stali* Mayr, 1871: 432. Monobasic. Synonymized by Lauck and Menke, 1961: 649.

Polhemus (1994) has shown that the type species of *Diplonychus* Laporte, *Nepa rustica* Fabricius, 1781, is a junior synonym of *Nepa plana* Sulzer, 1776, and a primary homonym of *Nepa rustica* Fabricius, 1775. A petition has been made to the ICZN to preserve the name *Nepa rustica* Fabricius (Polhemus and Kerzhner, 1995). Therefore, I continue here to use *Nepa rustica* Fabricius as the type species of the genus *Diplonychus*.

I have studied specimens of *Diplonychus indicus* Venkatesan and Rao, 1980, kindly furnished by Dr. Venkatesan, and find that this species is inseparable from *Diplonychus rusticus* (Fabricius) and, therefore, must fall as a junior synonym (New synonymy).

Lauck and Menke (1961) gave the synonymy of *Diplonychus* along with an extensive discussion. However, at that time *Appasus* was a synonym. The above synonymy gives the current status of the synonyms still

remaining under *Diplonychus* with the removal of *Appasus*.

The following species are now assigned to *Diplonychus*, with original genus given in brackets if applicable:

*annulatus* (Fabricius, 1781) [*Nepa*]

*eques* (Dufour, 1863) [*Appasus*]

*esakii* Miyamoto and Lee, 1966

*rusticus* (Fabricius, 1781) [*Nepa*] = *planus* (Sulzer, 1776) [*Nepa*] = *indicus* Venkatesan and Rao, 1980.

*stali* (Mayr, 1871) [*Nectocoris*]

*Diplonychus annulatus* (Fabricius, 1781)

*Nepa annulata* Fabricius, 1781: 333; type locality, "in Coromandel Mus. Dom. Banks" (= Coromandel Coast, Madras area, South India); types in London (1) and Copenhagen (2).

*Belostoma marginata* Gray, 1832: 248, pl. 93, fig. 4; type-locality "China." Synonymized by Mayr, 1871: 434.

*Sphaerodema rotundata* Laporte, 1833: 18; type-locality not given. Synonymized by Mayr, 1871: 434.

*Diplonychus annulatus*: Lauck and Menke, 1961: 649.

*Abedus sangameswari* Rupavathi, 1985: 169; type-locality Guntur District, Andhra Pradesh, India (manuscript species; nomen nudum).

See also:

*Sphaerodema annulatum*: Distant, 1906: 35 (brief redescription).

*Sphaerodema annulatum*: Hoffmann, 1941: 8 (catalog; synonymy; distribution).

This species has a much more restricted distribution than *D. rusticus* (Fabricius); however, the two species are geographically sympatric in southern India. The two species are easily distinguished, as the latter is much smaller and less rotund.

The synonymy above places the species *Sphaerodema rotundata* Laporte in the ge-



thus *Diplonychus*, and establishes the secondary homonym discussed below.

### ***Diplonychus heeri* Polhemus, NEW NAME**

*Diplonychus rotundatus* Heer, 1853: 85 (Tertiary fossil). Junior secondary homonym of *Diplonychus rotundatus* (Laporte, 1833: 18) = *Nepa annulata* Fabricius, 1781: 333.

*Diplonychus rotundatus* Heer, 1853 is a junior secondary homonym of *Sphaerodema rotundata* Laporte, 1833. The latter and its senior synonym *Nepa annulata* Fabricius, 1781 were placed in the genus *Diplonychus* by Lauck and Menke (1961) when they synonymized *Sphaerodema* (see synonymy of *Diplonychus* above). This leaves *Diplonychus rotundatus* Heer without a name; thus, for this taxon I propose the name *Diplonychus heeri* Polhemus.

Another fossil, *Sphaerodema jurassicum* Oppenheimer, 1888, was transferred by Handlirsch (1906: 543) to his new genus *Sphaerodemopsis*, and is presently placed in Naucoridae.

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